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ABSTRACT

Retention of students began soon after the introduction of graded elementary schools in the mid-1800s. As early as 1911, research started to show that retention failed to remedy the difficulties of academic achievement and social adjustment exposed through graded schools. Educators today have a number of options other than retention designed to help students who are not meeting grade-level standards. One of those options is enrolling students in smaller classes. Using the Project STAR database, this study examined whether class size remediates achievement scores of kindergartners and first graders once they have been retained. The study examined data on retained kindergartners and first graders to determine common demographic characteristics and school type and the effect of class size on academic achievement. Retained students' achievement scores in reading and math on the Stanford Achievement and the Basic Skills First tests were analyzed in three class sizes: small (13-17 students), regular (21-25 students), and regular with an aide. The average kindergarten and first grade retainee was poor, white, male, and attended a rural school. The study found that there was no significant difference among retainees at either grade level between or among classes. Also, class size did not remediate poor academic achievement. (Contains 31 references.) (JPT)

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The Effect of Class Size on Achievement and Retention in the Primary Grades: Implications for Policy Makers

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Abstract

Findings from Project STAR have stated conclusively that students in small class significantly outscore their counterparts in regular and regular with an aide classes. Using the extant database of STAR, this study examined two questions. One, what are the differences in achievement of kindergarten and first grade retainees between and among the three class types? Two, what portrait of the retainee emerges from Project STAR?

Results showed the retainee to be a poor, white male attending a rural school. This was due to the large population of nonminority, rural students. Proportionatley, the retainee was a nonminority.

The study found that there was no signficant difference among retainees at either grade level between or among class types. Class size was unsuccessful in remediating achievement as measured on reading and math from the Stanford Achievement Test and the Basic Skills First test tracking students K-3 and 1-3. The question arises as to why this occurred. Alternatives to retention are suggested.

The Effect of Class Size on Achievement and Retention in the Primary Grades: Implications for Practioners

Barbara H. Harvey

Introduction

The practice of retention arrived on the coattails of the graded elementary school which appeared in the mid 1800's. Influence of the Industrial Revolution and the Prussian model of education promoted the transformation of America's one-room schoolhouses into a system of graded classes. Standard courses of study and mandatory examinations evolved. Problems arose. It was obvious that some children did not possess the same academic skills as their classmates, at least when constrained by the variable of time. Some students were not as emotionally or as socially ready as their peers to move to the next grade level, despite their age. The homogeneous classrooms hoped for did not materialize. A solution was sought and retention identified as one treatment.

Yet, as early as 1911, studies began to show that retention failed to remedy the difficulties of academic achievement and social adjustment brought to the public's attention by implementation of grade levels. Practioners ignored the research. As graded schools proliferated, retention rates grew. So did the body of research against this practice.

In 1975, Jackson conducted a review of the retention literature. He found that none of the 44 studies from 1911 to 1973 could offer confirmation that retention accomplished its purpose. Following closely on the heels of this review was the meta-analysis done by Holmes and Matthews (1984). Their results paralleled those of Jackson, with the researchers concluding:

> Those who continue to retain pupils at grade level do so despite cumulative research evidence showing that the potential for negative effects consistently outweighs positive outcomes. Because this cumulative research evidence consistently points to negative effects of nonpromotion, the burden of proof legitimately falls on proponents of retention plans to show there is compelling logic indicating success of their plans when so many other plans have failed (p.232).

Retention has never been one of those good ideas gone awry. It simply was never a good idea from the start. With the bulk of over 100 years of research discrediting the contention that "the gift of time" improves the achievement of retainees, we must ask, "Why has the practice of retention in grade endured so long with so little change?"

Today, educators have at their disposal a number of techniques designed to help the student who is not meeting grade-level standards. A majority of the research emphasizes benefits

of intervention in the regular classroom for at-risk students. Learning problems can be diagnosed and prescriptions drafted and implemented (Norton, 1990, p.206). Lieberman (1980) and Shepard and Smith (1990) suggest that multi-disciplinary teams do in-depth analyses of students who are inadequate or severely deficient in basic skill acquisition. These students then advance to the next grade with Individualized Educational Plans. Recycling students through the same programs that were originally inappropriate for them will only perpetuate the inappropriate programs that become less interesting the second time around. Other in-class interventions suggested by the literature include peer tutoring, summer programs, mainstreaming, cooperative learning, attention to learning styles, individualized instruction, special instructional programs on weekends and during vacation, remediation before and after school, year-round schooling, and parent-help programs (Hartley, 1977; Bredekamp & Shepard, 1989).

In addition to in-class programs, there are separate alternatives to promotion with remediation. Included are nongraded, multi-aged programs much like those of the first American schools, developmentally appropriate curriculum taught by teachers properly prepared to deliver it, curriculum based on more current psychology, and use of smaller classes (Wertsch, 1985, Byrnes & Yamamoto, 1986; Connell, (1987; Resnick, 1987; Charlesworth, 1989; Word et al, 1990). The most often selected alternatives to remediation are increased remedial instruction and small classes (Brynes & Yamamoto, 1986). Unlike retention these options have a sound research base signifying positive effects.

Among the list of alternatives to retention is the often-mentioned technique of small class size. In 1978, Glass and Smith conducted a meta-analysis of the class size research and found that students learn more in smaller classes. In 1984 and 1989, Slavin re-analyzed eight of the 77 studies in the Glass and Smith meta-analysis using an abbreviated form of a review technique called best-evidence synthesis. Results showed that substantial reductions in class size generally had a positive effect on student achievement.

The Problem

The pendulum often swings from one extreme to the other in educational reform. Student retention has not escaped this phenomenon. During the mid 1800's, retention was a common practice. By 1900, the average retention rate for all grades was 16%. By 1930, social scientists began questioning the value of retaining students and suggested that there might be negative effects from retention. The retention rate dropped to approximately 5% in the 1940's with social promotion being anointed as one alternative to retention. In the 1960's, social promotion became widespread. Critics, however, were quick to

note declining achievement scores and emphasized a concern with promoting students who lacked the necessary skills to move ahead with their peers.

The pendulum swung once again toward retention in the 1980's; the Gallup Poll (1986) showed that 72% of the US citizenry favored stricter grade-to-grade promotion standards. Consequently, retention rates climbed toward 7% annually. It has been estimated that 5.6 million students in the United States, 14% of the total 40 million school population, have repeated a grade during the past 12 years (Frymier, 1989). The January 1990 Policy Brief from the Center for Policy Research in Education estimated that the overall expenditure for retention in the US is $10 billion per year. By ninth grade, 50% of all US students have failed at least one grade or have dropped out of school (Shepard & Smith, 1989). Statistics relate that even one grade retention increases the risk of high school dropout from 10% to 40% (Safer, 1983) while some studies say that two years of retention will increase the chances of dropping out to 90% (Hahn, 1987).

The problem with retention lies in the fact that, despite a multitude of studies proving that retention is not beneficial, educators and policy makers continue to employ it as a common practice. Students continue to be retained yearly under the guise of higher standards. Those same students continue to fall further behind and many eventually become dropouts. Neither our society nor our economy can continue to lose so much money, so much man power as is lost due to the deleterious practice of retention.

The Study

Cooley and Bickel (1986) suggest that decision-oriented research make use of already existing data. Policy making too often depends on opinion of the policy makers rather than on information produced by research. In keeping with Cooley and Bickel, this study uses the extant database of Project STAR to examine the question of whether class size will remediate achievement scores of kindergartners and first graders once they have been retained. Additionally, a portrait of the retained student at K and grade one is also drawn.

A brief description of the STAR database and processes ensues. STAR used a within-school design and random assignment of teachers and students to the three class conditions of small (13-17 students), regular (21-25 students), and regular with an aide (21-25 students). This in-school design reduced the major sources of possible variation in student achievement attributable to school effects.

Initial selection of participating schools was made with the choice of schools within systems determined partly by school size. The in-school design required that enrollment be large enough to provide at least one class type at each grade. Grade-level enrollment determined the number of classes of each type within each school. The 79 elementary schools selected provided

approximately 100 classes of each type. These schools served rural, urban, suburban, and inner-city students with approximately 7000 students participating in Project STAR in kindergarten. In 1985-86, there were 128 small classes, 101 regular classes, and 99 regular classes with aides. Students in small class in kindergarten remained in small class through grade three. There were approximately 7100 first graders. All students entering Project STAR after the initial year were placed in class type randomly. Attrition of students and schools was accounted for by oversampling.

STAR was a randomized experiment employing the control-group design of Campbell and Stanley (1963), Design Number 6. This design uses post-test analysis only. Project STAR's primary analysis consisted of a cross-sectional analysis of data from all students participating in project classes at each grade level. In addition, longitudinal analyses were conducted in which data were analyzed for students who were in the project in the same class type for consecutive years. Analyses-of-variance were utilized.

Project personnel collected data about student achievement, development and variables, other than class size, that might have affected achievement. Data collection instruments included the Stanford Achievement Test (SAT), Tennessee's Basic Skills First Test (BSF), the Self-Concept and Motivation Inventory (SCAMIN), school and system profile, principal profile, teacher profile, teacher log, grouping questionnaire, parent/volunteer/teacher interaction questionnaire, teacher problem checklist, teacher exit interview, aide profile, aide questionnaire, aide log, roster, and special programs form. Yearly, data from the measurement instruments were analyzed in subsets: the SAT achievement scales, the BSF performance tests, and the SCAMIN. Multivariate test statistics were used for each subset.

SAMPLE

The STAR database was used as a means to analyze the phenomenon of retention and class size. The population for this study is the students who were retained at the end of kindergarten (1984-85) and those who were retained at the end of grade one (1985-86) in Project STAR. STAR began in 1985 with students who entered kindergarten during that year. Entry profiles of students showed whether a student had been retained in kindergarten (1984-85). Student records related that 253 youngsters had been retained in K (1984-85) and entered STAR in K (1985-86). Students who entered the STAR database in grade one in 1986 had been held back in first grade or were new to the project. Over-age students in K (1985) were either a)kept out of school for some reason or b)retained in grade in K. Kindergarten was not required in the state of Tennessee in 1984-85 and so some students entered school for the first time in grade one.

Students who entered STAR for the first time and were six years nine months and twenty-two days (6.8 years) and younger as of October 1, 1986 were considered new first graders. Those

students who were approximately six years eleven months (6.9 years) and older at this time were considered to have been retained. Students who had been retained in kindergarten were identified by teachers who marked such information on student forms; this information was then added to their record on the STAR database.

The STAR database followed students from kindergarten through third grade. If a student in the STAR cohort left or was retained, a new student was added by random replacement to the cohort. No additional data were collected for the student who left the STAR cohort. In order to determine the effects on retained students, retained students were identified from student records and/or picked up new students who entered STAR each year and who were approximately one year older than their "regular" age mates. For example, in 1986-87 (grade one) 2276 new students entered STAR; 1152 of these were "overage," defined as at least 6.9 years as of October 1, 1986. An age of 6.9 years is approximately equivalent to six years, eleven months.

Entry age of students into kindergarten is determined by the State Board of Education. In Tennessee, a child may enter kindergarten if he is no less than five years old on or before September 30. A child enrolling in first grade must be no younger than six years old on or before September 30 of the enrollment year. He must enter kindergarten or grade one no later than his seventh birthday. Kindergarten was not required at the time of STAR in Tennessee.

Teachers identified 253 kindergartners as having been retained in 1984-85. These youngsters entered STAR in 1985-86 as repeating kindergartners. At this time, 6041 first time kindergarten students entered STAR. A frequency distribution of the 253 retainees related that 11 (4%) were 5.8 years or younger; 242 or 96% of this group were 5.9 years or older as of October 1, 1985. The mean age of new enrollees was 5.4 years while the mean age of retained kindergartners as of October 1, 1985 was 6.2 years. These students would then be at least 6.9 years (approximately 6 years, 11 months) when they entered first grade, the age selected as an indicator of retention for the grade one sample. Confidence in selecting this age as an indicator of retention was established with such a high percentage of retained kindergartners showing at least 5.9 years for kindergarten entrance in September, 1985, and subsequently would be 6.9 years for grade one in September, 1986.

Data Collection

The STAR database followed students from kindergarten through third grade. The Center of Excellence for Research in Basic Skills extracted data from the STAR database for the population of those students retained either in kindergarten or in grade one. The mean and standard deviation of the scores for the total reading and total math sections of the Stanford Achievement Test (SAT) were collected on both students retained and not retained by class type at the end of kindergarten and

grades one, two, and three. Total percent passing was calculated for these same parameters on the criterion-referenced BSF test. (BSF is not given in K.) Total number of students tested was also given for each section of the test, disaggregated by class type within "not retained" and "retained" categories of students. Not all students were always present for all parts of the test, so the number (n) of students may vary slightly within years. Variation in numbers can be assumed to be reasonably equivalent among class types due to the randomness of student placement.

Demographics of sex, race, socio-economic status (determined by free and not-free lunch), class size distribution, and school type distribution were collected on students at the end of kindergarten and grade one.

Analysis

This study used post-test analysis of the students' results on the SESAT II test at the end of kindergarten, and the results on the SAT at the ends of first, second, and third grades, and on the BSF test at the end of grades one through three. An analysis of variance (ANOVA) was computed on scores for small (S), regular (R), and regular with an aide (RA) classes for retained kindergarten students and retained first grade students as well as those who had not been retained. Computer analysis provided F ratios and F probabilities. Trends were identified by comparing those students who had been retained to those who had not been retained. Frequency and percent of placement by class size and school type were also calculated. Chi-square was used to calculate significance for demographics of retained and not retained students at the $p \leq .05$.

Findings

Much of the literature suggests the portrait of the retained youngster to be a black, poor male in inner city schools. This is not the picture that resulted from Project STAR, rather the retained youngster was a white male from a rural school. The STAR database is made up of a preponderance of white, rural males. This overpopulation of whites accounts for the high percentage of white retainees at both the kindergarten and first grade levels. The same is true of rural schools, which constitute the highest percentage of schools in Tennessee.

Disaggregation by race produced the following: of the 4216 white students entering STAR in 1984-85, 5% entered as kindergarten retainees. Of the 2078 minority students, 2.5% entered as kindergarten retainees. In 1985-86, first time kindergartners entering STAR were 67% white and 33% minority, while the previously retained pupils entering STAR in kindergarten were 79% white and 21% minority.

In grade one, no significant difference was revealed in the analysis of retention by race. New entrants were 60% white and 52% of the retained students were white. Of the retained pupils, 61% were white, while of the non-retained pupils, 59% were white. Retention among kindergartners showed more than twice as many

white students were retained as were minority children; grade one showed an almost equal number of retentions between the races.

By sex, the rate of retention is higher among boys than among girls. There are slightly more than twice as many boys (69%) as girls (31%) in the retained population of kindergartners. In first grade, there are slightly less than two times the number of boys (62%) as girls (38%) in the first grade.

Breakdown by socio-economic status, determined by utilizing free and not free lunches, was again similar to that of earlier studies. Of 253 retained kindergartners, 63.2% received free lunch, almost twice the number paying for lunch. Results were similar among first graders. Of the 1117 who reported on free lunch, 69.2% were on free lunch and 30.8% were not on free lunch.

A variation from the findings of previous studies appeared in the disaggregation of retainees by school type. Of the four school types, the largest percents of previously retained kindergarten students were in rural and suburban schools, with approximately 58% and 23% retained respectively as compared to 7% in inner-city and 12% in urban schools.

As with kindergartners, the largest number of first grade retainees was found in rural schools and the least number in urban schools. Of the retained population, approximately 40% of the retentions occurred in rural schools. Of students entering STAR in grade one, more than half of those from rural areas (54.6%) and from inner-city schools (54.8%) had been retained in grade one (1985-86).

The portrait of the retained kindergartner is drawn from Project STAR as a white male from a low socio-economic background in a rural school. This is due to the large numbers of white rural students in the database. Although fewer of the 253 kindergarten retainees were minority pupils, the proportion of minority pupils was higher than the proportion of nonminority pupils retained. Tables 1-4 summarize the demographics.

Retention studies show that once retained, a child does not catch up with his or her peers academically. The present study offered similar conclusions analyzing test scores of retained kindergartners and first graders by class size. A comparison of the SAT scores in reading and math across four years showed that, contrary to the expectation established by other class-size studies, retained students in regular classes performed better than retainees in S and RA classes in all cases except one (retainees in S in math in K). Small-class students did better than R and RA students in only three cases, and all were in K: better than RA in reading by .8, better than R by 3.2 points in reading, and better than RA by 9.1 points in math. In all other cases, the test results of S class students fell behind those of RA students who generally scored lower than R class students. There is no significant difference between and within groups. The pattern of mean scores fails to reflect any remediation effect offered by the S condition for retained kindergarten students.

A different pattern emerges when looking at the means of reading and math scores of non-retainees for four years. At every grade level in both reading and math, students in the S condition outscored those in R and RA by a significant margin. Additionally, these students outscored those second-time kindergartners in all three class sizes. Once retained, kindergartners were not able to catch up. See Tables 5 and 6.

As with the retained kindergarten students, generally no significant difference was found between and within groups for retained first graders. (See Tables 7 and 8.) Only in grade one with math scores was there a significant difference between R and RA and again in grade two in reading between the same groups. The pattern of mean scores shows that no single class size made a difference to retained students.

The picture of achievement among students who entered STAR at age or who were not retained in grade one is not as clear as that of first-time kindergartners. While students in S always outscored those in the other two conditions, the difference was only significant at grade one in reading and math and again in reading in grade two. There was also a significant difference between R and RA pupils in reading and math and between R and RA pupils in math in grade two. No statistical difference was found in grade three.

Consistent with the results on the SAT were the findings from the analysis of the Basic Skills First Test results found in Tables 9 and 10. Kindergartners who had not been retained performed better in S classes than those in R or RA in both reading and math. No matter the class size, new kindergartners had higher percentages passing than did the retainees.

Retained kindergartners in S class failed to perform as well as those in R or RA classes. Retainees had a lower percent passing in small class in both reading and math than did pupils in R and RA in each of the three grade levels. In grade one, retainees in RA had a higher percent passing in both reading and math than did pupils in R and S. This is true in grade two in math, and in reading in grade three. Students in R have a higher percent passing in reading in grade two and in math in grade three than did pupils in either of the other two conditions. There is no statistical difference at $p \leq .05$. Again, once a child was retained, small-class placement did not improve his scores.

On the BSF, the new first graders out-performed the retained first graders in all cases except one as seen in Tables 11 and 12. On the math section of the test, the retainees had a higher percent passing the test only in the RA condition than did the new first graders. Those students not retained performed better in small class, with one exception at the third grade level in math. There was no statistical difference among or between groups for the retained first graders at any of the three grades. Yet, students in S did have a higher percent passing the test in reading and math in grades one and two, and in math in grade three. A difference of 2-4 points was found. Even with this

slight variation in scores, there is no remedial effect evident from placing retained students in small classes.

In determining whether class size made a difference in achievement of retained kindergarten and first grade students, the findings from this study were conclusive. Tracking both retained kindergartners and retained first grade students through grade three, the emergent pattern showed that once a student had been retained, small class size failed to remediate test scores. Students who had not been retained consistently out-scored those who had been held back regardless of class size. Small class size could not help a student once he or she had been retained.

Conclusions and Recommendations

This study raises the question of why small class size did not remediate test scores for retainees. The review of research made as part of this study also showed that once a primary-grade student is retained, generally educators have been unsuccessful in remediating the low scores. How long will this unhealthy practice persist? Schwager et al. (1992) summarized the status of retention:

> Retention has historically been seen as a solution to student failure. By controlling the flow of low-achieving students through a system of mass compulsory education, retention practices give the appearance of accountability and enforcement of standards without intervening in the underlying problem, that of low student achievement. As an organizational solution, retention is convenient: costs can be passed on to taxpayers through the general education budget and no change in system structure is required for implementation (p.435).

Educators in the United States must plead guilty as charged. While we tout retention as a means to strengthening standards and promoting stronger student performance, countries like Denmark, Japan, Germany, Canada, and England do not employ retention as an instructional strategy in the elementary grades and some believe that their students out-perform ours (McAdams, 1993).

Policy makers and practioners might take a lesson from these countries in light of our own research. Not to be ignored is the question of equity. With minority and male students retained twice as often as nonminority and female students (Plummer, Lineberger, Graziano, 1986), issues of segregation and equal opportunity must be considered. Likewise, if retained children are rejected by their peers as some studies have shown (Granziano & Shaffer, 1979; Gump, 1980; Hetherington & Parks, 1979), academic and familial problems associated with retention are likely to be compounded (Plummer 1984). Additionally, a significant proportion of students retained are routed into

special education programs. A question of discrimination may be raised here. Shepard and Smith (1987) assert that

> Retention does nothing to promote the achievement of the affected individual or the average of the group as a whole and because the disadvantaged and minority children are most apt to be affected, retention should best be thought of as educational waste to those who most need the benefits of education. Retention has high cost and virtually no value, save the public relations advantages for the schools (p.235).

Stroup and Zirkel (1983) provide a review of the legal ramifications connected with retention practices. From the few court cases available, they determined from their look at cases that retention policies should use multiple criteria, avoid radical changes, and not disproportionately affect any single minority group. According to Walden and Gamble (1985), legal challenges to school district retention policies are increasing. With the staggering amount of research showing retention either to be of no benefit or actually to be harmful, the onus of proving this treatment to be in the best education interest of the child may prove to be a very difficult one for the school districts employing this practice.

Concurrently, a look at finances is often an effective catalyst to change. A comparison of cost for retention and remediation in grade level shows that the price of retention is more than three times that of high quality remedial services for a year; compare $3000 to $800 (Allington, 1988 in Norton, 1990, 206). Surely, the triangulation of achievement, self-esteem, ethics, and cost should serve to promote change in policy regarding retention and promotion.

Educators must keep in mind a bit of wisdom passed on by Lao-tzu: "A journey of a thousand miles must begin with a single step." But imperatively, that journey must begin now; the gift of time that retention propounds to give so many has been shown quiet conclusively to rob our country of vital resources in the form of lost years for retainees who so often become dropouts.

The practices of retention and large class size are not going to disappear over night, but the first steps to replace inadequate practices with effective ones must be taken now. While retention policies exist, revisions must be made. Simultaneously, a re-educative program about retention and its effects and the benefits of small classes must occur. In conjunction, high quality programs and alternative strategies to retention must be investigated, developed, and implemented. These three prongs will form a comprehensive program designed to meet children's needs.

Policy makers must recognize that panaceas in education do not exist and that any ingredient in the remedy for ills is

expensive. It is no longer a question of whether additional costs can be incurred but at what point funds should be provided. We cannot continue to identify the failure of a child to succeed with learning tasks as the child's failure, but we must recognize it as a failure of curriculum and instruction (Bloom, 1981). The failure will become our own if we do not curtail a practice which we know to be of no benefit to children.

Table 1

Frequency of Sex of Kindergartners Retained and Not Retained Entering Star in 1985 and of First Graders Retained and Not Retained Entering Star in 1986

	Kindergarten[a]			1st Grade[b]		
	Retained	Not Retained	Row Total	Retained	Not Retained	Row Total
Male						
n	175	3060	3235	714	531	1245
Row%	5.4	94.6	100.0	57.3	42.7	100.0
Col%	69.2	50.7	51.4	62	47.2	54.7
Female						
n	78	2981	3059	438	593	1031
Row%	2.5	97.5	100.0	42.5	57.5	100.0
Col%	30.8	49.3	48.6	38.0	52.8	45.3
Column Total						
n	253	6041	6294	1152	1124	2276
Row%	4.0	96.0	100.0	49.4	50.6	100.0
Col%	100.0	100.0	100.0	100.0	100.0	100.0

[a] $X^2=33.33$; $p\leq 0.00$

[b] $X^2=49.86$; $p\leq 0.00$

Table 2

Frequency of Race of Kindergartners Retained and Not Retained Entering Star in 1985 and of First Graders Retained and Not Retained Entering Star in 1986

	Kindergarten[a]			1st Grade[b]		
	Retained	Not Retained	Row Total	Retained	Not Retained	Row Total
White						
n	201	4015	4216	702	661	1363
Row%	4.8	95.2	100.0	51.5	48.5	100.0
Col%	79.4	66.5	67	61	58.9	60
Non-White						
n	52	2026	2078	449	461	910
Row%	2.5	97.5	100.0	49.3	50.7	100.0
Col%	20.6	33.5	33.0	39.0	14.1	40.0
Column Total						
n	253	6041	6294	1151	1122	2273
Row%	4.0	96.0	100.0	50.6	49.4	100.0
Col%	100.0	100.0	100.0	100.0	100.0	100.0

[a] X^2=18.51; $p \leq 0.00$

[b] X^2=1.02; $p \leq 0.31$

Table 3

Frequency of Socioeconomic Status of Kindergartners Retained and Not Retained Entering Star in 1985 and of First Graders Retained and Not Retained Entering Star in 1986

	Kindergarten[a]			1st Grade[b]		
	Retained	Not Retained	Row Total	Retained	Not Retained	Row Total
Free Lunch						
n	160	2887	3047	773	574	1347
Row%	5.3	94.7	100.0	57.4	42.6	100.0
Col%	63.2	47.8	48.4	69.2	52.9	61.1
Not Free Lunch						
n	93	3154	3247	344	512	856
Row%	2.9	97.1	100.0	40.2	59.8	100.0
Col%	36.8	52.2	51.6	30.8	47.1	38.9
Column Total						
n	253	6041	6294	1117	1086	2203
Row%	4.0	96.0	100.0	50.7	49.3	100.0
Col%	100.0	100.0	100.0	100.0	100.0	100.0

[a] $X^2=23.21$; $p\leq 0.00$

[b] $X^2=61.95$; $p\leq 0.00$

Table 4

Frequency of School Type of Kindergartners Retained and Not Retained Entering Star in 1985 and of First Graders Retained and Not Retained Entering Star in 1986

	Kindergarten[a]			1st Grade[b]		
	Retained	Not Retained	Row Total	Retained	Not Retained	Row Total
Inner-City						
n	17	1403	3047	281	234	515
Row%	1.2	98.8	100.0	54.6	45.4	100.0
Col%	6.7	23.2	22.3	24.4	20.8	22.6
Suburban						
n	57	1347	1404	299	408	707
Row%	4.1	95.9	100.0	42.3	57.7	100.0
Col%	22.5	22.3	22.3	26.0	36.3	31.1
Rural						
n	148	2757	2905	465	383	848
Row%	5.1	94.9	100.0	54.8	45.2	100.0
Col%	58.5	45.6	46.2	40.4	34.1	37.3
Urban						
n	31	534	565	107	99	206
Row%	5.5	94.5	100.0	51.9	48.1	100.0
Col%	12.3	8.8	9.0	9.3	8.8	9.1
Column Total						
n	253	6041	6294	1152	1124	2276
Row%	4.0	96.0	100.0	50.6	49.4	100.0
Col%	100.0	100.0	100.0	100.0	100.0	100.0

[a] $X^2=41.18$; $p \leq 0.00$

[b] $X^2=28.99$; $p \leq 0.00$

Table5

Stanford Test Scores of Retained Kindergartners K-3

	K				Grade 1				Grade 2				Grade 3			
Class	Read		Math		Read		Math		Read		Math		Read		Math	
Type	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$
S	59	422.3	61	475.1	45	485.3	49	503.2	34	548.7	33	542.8	18	587.0	17	593.7
R	93	427.4	93	471.9	63	496.0	76	508.4	50	557.0	50	556.4	37	607.0	36	606.7
RA	76	421.5	77	466.0	41	486.8	47	503.4	35	551.8	36	546.3	20	604.1	20	602.9
Total	228		231		149		172		119		119		75		73	
F	1.89		1.04		0.74		0.33		0.34		1.20		1.52		0.79	
p	0.16		0.35		0.48		0.72		0.71		0.30		0.23		0.46	

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Table 6

Stanford Test Scores of Kindergartners Not Retained K-3

	K				Grade 1				Grade 2				Grade 3			
Class	Read		Math		Read		Math		Read		Math		Read		Math	
Type	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$
S	1673	441.2	1694	491.6	1292	536.0	1319	542.6	1027	598.8	1023	594.4	886	630.1	898	631.3
R	1906	435.1	1932	483.7	1393	525.3	1415	533.0	1112	594.1	1111	589.7	964	623.5	971	626.4
RA	1959	436.0	1991	483.4	1460	523.9	1502	532.2	1106	591.3	1104	586.8	960	622.6	976	625.6
Total	5538		5617		4145		4236		3245		3238		2810		2845	
F	18.97		16.64		18.91		24.59		7.51		7.92		11.33		5.50	
p	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	

Table 7

Stanford Test Scores of Retained First Graders (1-3)

Class Type	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$
S	146	501.1	153	523.6	96	562.9	95	565.7	65	595.9	66	598.9
R	472	498.9	505	517.9	336	554.8	339	557.7	234	590.6	238	595.5
RA	405	506.5	438	523.3	297	561.2	296	561.3	228	596.2	236	598.7
Total	1023		1096		729		730		527		540	
E	2.70		2.67		2.67		1.64		1.75		0.50	
p	0.07		0.07		0.07		0.19		0.18		0.60	

Table 8

Stanford Test Scores of First Graders Not Retained (1-3)

Class Type	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$
S	199	522.8	202	531.0	133	596.5	113	585.5	54	627.3	96	625.5
R	459	527.0	466	519.7	251	583.2	249	575.5	186	621.5	188	624.3
RA	400	517.5	408	525.5	243	596.7	242	585.2	184	622.7	187	624.9
Total	1058		1076		607		604		464		471	
F	8.12		5.64		5.19		4.20		0.77		0.03	
p	0.00		0.00		0.01		0.02		0.46		0.97	

Table 9

BSF Percent (Rounded) Passing By Grade (1-3) for Condition (S,R,RA) By Prior Retention in K, Star, 1989

	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
Class Type	n	%	n	%	n	%	n	%	n	%	n	%
S	39	70	39	76	38	65	38	74	29	67	29	70
R	48	69	49	79	38	68	39	78	26	71	25	80
RA	44	73	45	83	43	67	44	81	32	74	33	75
Total	131	70	133	80	119	67	121	78	87	71	87	75
p	0.58		0.33		0.84		0.28		0.42		0.24	

Table 10

BSF Percent (Rounded) Passing By Grade (1-3) for Condition (S,R,RA) By No Retention in K, Star, 1989

Class	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
Type	n	%	n	%	n	%	n	%	n	%	n	%
S	1208	88	1202	92	1128	87	1247	90	1103	85	1101	88
R	1161	84	1153	89	974	85	987	89	736	84	735	87
RA	1094	85	1091	90	1072	86	1093	90	987	84	986	86
Total	3463	86	3446	90	3274	86	3327	90	2826	84	2822	87
p	0.00		0.00*		0.00*		0.00*		0.05*		0.08*	

* Probably heavily influenced by the large n.

Table 11

BSF Percent (Rounded) Passing By Grade (1-3) for Condition (S,R,RA) Retained into First Grade, Star, 1989

Class	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
Type	n	%	n	%	n	%	n	%	n	%	n	%
S	154	79	151	88	136	75	138	85	123	70	123	76
R	481	76	480	86	307	73	313	82	198	71	199	74
RA	438	78	435	86	314	72	324	81	255	71	258	74
Total	1073	77	1066	86	757	73	775	82	576	71	580	74
p	0.08		0.23		0.33		0.01		0.75		0.51	

Table 12

BSF Percent (Rounded) Passing By Grade (1-3) for Condition (S,R,RA) By No Retention in First Grade, Star, 1989

Class	Grade 1				Grade 2				Grade 3			
	Read		Math		Read		Math		Read		Math	
Type	n	%	n	%	n	%	n	%	n	%	n	%
S	194	85	190	91	144	86	145	90	138	84	137	86
R	455	80	454	86	213	82	212	87	136	83	136	85
RA	389	83	388	88	259	85	264	89	202	83	200	87
Total	1038	82	1032	88	616	84	621	87	476	83	473	86
p	0.00		0.00		0.01		0.03		0.51		0.70	

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